**Inspection and test plan – spray seal**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Project no.** | | CC0388 | | **Project name** | | Shoalhaven Area Remediation of Multiple Slips | | | | | | **Approved by** |  | |
| **ITP no.** | SYM-0388-ITP-011 | | | **Revision no.** | | B | **Revision date** | 12/05/23 | **Plant and equipment used** | | |  | | |
| **Site no.** |  | | | **Location (chainages, detailed description or marked up plan)** | | | | | |  | | | | |
| **Layer thickness** | | |  | | **Date works commenced** | | |  | | | **Date works completed** | | |  |

Attach Dockets, Certificates and QA Documents to ITP

|  | |  |  |  |  | **Verify of acceptance by** | | | | **Remarks / record (eg. test frequency, reports, certificates, checklist etc)** | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | |  |  |  |  | **Symal Infrastructure** | | **Shoalhaven City Council** | |
| **Item no.** | | **Activity** | **Ref docs** | **Acceptance criteria** | **Acceptance** | **Key** | **Sign date** | **Key** | **Sign date** |
| **1.0 Traffic** | | | | | | | | | | | |
| **1.1** | | Traffic Management Plan Submitted | TfNSW G10  Cl. 2.2 | Submitted at least 20 working days prior to submission of ROL’s if required. | Yes  No  N/A | H |  |  |  |  | |
| **1.2** | | Traffic Control Plan | TfNSW G10  Cl. 2.5 | If not previously submitted as part of the TMP or where a TMP is not required, submitted at least 3 working days prior to its proposed use. | Yes  No  N/A | H |  |  |  |  | |
| **1.3** | | ROL’s | TfNSW G10  Cl. 2.1 | Submitted at least ten (10) days prior to commencement of works. | Yes  No  N/A | H |  |  |  |  | |
| **1.4** | | Survey Extent of the Site | IFC Drawing | Survey work is performed by qualified surveyor using appropriate surveying equipment to determine extent of the site. | Yes  No  N/A |  |  |  |  |  | |
| **2.0 Material** | | | | | | | | | | | |
| **2.1 Bituminous Material** | | | | | | | | | | | |
| **2.1.1** | | Binder | TfNSW R106/  R107  Cl. 2.1.1 | Conformance of Characteristics as per tables 3252.1 and 3253.1  Sample to be taken for each load at delivery point | Yes  No  N/A |  |  |  |  |  | |
| **2.1.2** | | Storage and Handling | TfNSW R106/  R107  Cl. 2.1.2 | Bitumen not to be heated above the manufacturer’s recommendations | Yes  No  N/A |  |  |  |  |  | |
| **2.2 Aggregate Precoating Agent & Bitumen Adhesion Agent** | | | | | | | | | | | |
| **2.2.1** | | Aggregate Precoating Agent | TfNSW R106/  R107  Cl. 2.2 | Aggregate precoating agents must conform to Specification TfNSW 3268 for the grade of polymer modified binder specified in Annexure R107/A. | Yes  No  N/A |  |  |  |  |  | |
| **2.2.2** | | Bitumen Adhesion Agent | TfNSW R106/  R107  Cl. 2.2 | Bitumen adhesion agents must conform to Specification TfNSW 3269 for the grade of polymer modified binder specified in Annexure R107/A. | Yes  No  N/A |  |  |  |  |  | |
| **2.3 Oils for Reducing the Viscosity of Bitumen** | | | | | | | | | | | |
| **2.3.1** | | Oils for Reducing the Viscosity of Bitumen | TfNSW R106/  R107  Cl. 2.3 | The oils for reducing the viscosity of bitumen must conform to AS 3568. | Yes  No  N/A |  |  |  |  |  | |
| **2.4 Aggregate** | | | | | | | | | | | |
| **2.4.1** | | Properties | TfNSW R106/  R107  Cl. 2.4.1 | The supply and delivery of aggregate must meet the requirements of Specification TfNSW 3151.  Test results for each site of aggregate must be obtained before use in the Works.  If requested, a sample from the same site must be provided to the Principal.  The sample size must follow AS 1141.3. | Yes  No  N/A |  |  |  |  |  | |
| **2.4.2** | | Stockpiles | TfNSW R106/  R107  Cl. 2.4.2 | Arrange and manage aggregate stockpiles in accordance with the following requirements:  The maximum Site size for aggregate stockpiles is 250 m3.  Stockpiles must be placed on firm level ground and separated from other stockpiles to prevent cross-contamination.  The quantity and type of each stockpile must be clearly labeled.  Recovery from stockpiles must minimize segregation and contamination. | Yes  No  N/A |  |  |  |  |  | |
| **2.5 Geotextile** | | | | | | | | | | | |
| **2.5.1** | | Properties | TfNSW R106/  R107  Cl. 2.5 | Nonwoven needle punched fabric.  Minimum melting point: 165°C.  Minimum mass: 130 g/m2.  Minimum bitumen saturation: 0.9 L/m2 | Yes  No  N/A |  |  |  |  |  | |
| **3.0 Nominated Materials and Design of Bituminous Surfacing** | | | | | | | | | | | |
| **3.1** | | Surface texture | TfNSW R106/  R107  Cl. 1.1 | Measure surface texture – Test Method T240 | Yes  No  N/A |  |  |  |  | Five (5) measurements every 250 metres and at changes in aggregate size or heavy patches (shoulder, wheel paths, between wheel paths and centre line) per lane of sprayed bituminous surfacing works) | |
| **3.2** | | Design | TfNSW R106/  R107  Cl. 3.1 | Nominated application rates using T240 results and nominated materials. | Yes  No  N/A | H |  |  |  | Bitumen application rate in L/m²  Aggregate spread rate in m²/m³ | |
| **3.3** | | Proportions of Constituents | TfNSW R106/  R107  Cl. 3.2 |  | Yes  No  N/A | H |  |  |  |  | |
| **3.4** | | Submission Materials and Spray Seal Design | TfNSW R106 CL. 3.3/  R107  Cl. 3.2 | Submission of Nominated design, T240 surface texture recordings, nominated materials and conformance certificates | Yes  No  N/A | H |  |  |  | Constituent material:  Aggregate  Binder  Precoat  Adhesion agent  Cutter oil  (7 days prior to works being carried out) | |
| **3.5** | | Design Review | TfNSW R106 CL. 3.4/  R107  Cl. 3.3 | Review design at each location based on actual ALD test result for the actual aggregate to be used instead of the ALD of the nominated material. | Yes  No  N/A | H |  |  |  |  | |
| **4.0 Process Control** | | | | | | | | | | | |
| **4.1** | | Sampling And Testing | TfNSW R106/  R107  Cl. 4.1 | Materials are sampled and tested according to relevant specifications in Clause 2 and AS 2008. Testing complies with Annexure R107/L. | ☐ Yes ☐ No ☐ N/A |  |  |  |  |  | |
| **4.2** | | Application Of Sprayed Bituminous Surfacing | TfNSW R106/  R107  Cl. 4.2 | provide a uniform application of binder with adequate adhesion to the underlying surface.  provide a complete cover of interlocking aggregate particles.  achieve effective bond between binder and aggregate. | ☐ Yes ☐ No ☐ N/A |  |  |  |  |  | |
| **4.3** | | Process Control Chart | TfNSW R106 Cl. 4.3 | Use process control chart for work where 10 or more sprayer runs greater than 1,000 litres are required per shift.  Take corrective action where conformance criteria is not met. | Yes  No  N/A |  |  |  |  | ≥ 2% and ≤5% over 5 successive runs | |
| **5.0 Condition for Commencement of Sprayed Bituminous Surfacing Works** | | | | | | | | | | | |
| **5.1** | | Aggregate Delivery | TfNSW R106/  R107 C.L. 5.1 | Aggregate supplied with a light, uniform coverage of all particles. Store to avoid contamination– Clean and dry.  Stockpile the material at the site, the maximum site size must not exceed 250 cubic metres  Adequately precoated | Yes  No  N/A |  |  |  |  | Cover aggregate if rain is imminent | |
| **5.2** | | Transitions | IFC Drawing | Loose or damaged material is removed.  Transition areas are properly compacted.  Neat edges on the transition area. | Yes  No  N/A | S |  |  |  | Transition extent mark-up | |
| **5.3** | | Preparation Of Pavement Surface | TfNSW R106/  R107 CL. 5.2 | Pavement surface to be swept by use of rotary road broom, suction broom and stiff bass hand broom (if needed). | Yes  No  N/A |  |  | W |  | Sweeping must extend a least 300mm beyond each edge. | |
| **5.4** | | Pick Up Surface Level | IFC Drawing | Surface Level picked up by qualified surveyor. | Yes  No  N/A |  |  | W |  |  | |
| **5.5** | | Pavement Temperature and Weather Conditions | TfNSW R106/  R107 CL. 5.3 | Measure and record pavement temperatures at regular intervals during the course of work.  Where spray sealing is delayed and significant rain events have since occurred, undertake moisture testing to ensure the base has achieved sufficient dry back. | Yes  No  N/A |  |  |  |  | If pavement is in shade and sun take both measurements.  Do not spray wet pavement or when rain is imminent  Do not spray during strong winds or dust storm. | |
| **5.6** | | Protection of services and road fixtures | TfNSW R106/  R107 CL. 5.4 | Protect road fixtures, (gratings, hydrants, valve boxes, hydrants, manhole covers, bridge or culvert decks etc.  Remove adherent patches of foreign material from the surface of the pavement. Mask or remove raised pavement markers. | Yes  No  N/A |  |  |  |  | TRPMs shall be the same colour as the colour of the RRPMs. For example, they should be:  Supplement the lane line - white  Dividing line - yellow  TRPMs should simulate the normal RRPM  pattern for the respective pavement markings | |
| **6.0 Application of Sprayed Bituminous Surfacing** | | | | | | | | | | | |
| **6.1** | | Plant | TfNSW R106/  R107 C.L. 6.1 | Certification and operation of sprayer  Sufficient loaded and measured trucks of dry aggregate to provide full cover for the area sprayed and a uniform finish.  Rollers – dual axle smooth pneumatic tyred multi-wheel with mass greater than seven (7) tonnes without ballast and minimum tyre pressure of 550kPa. | Yes  No  N/A |  |  |  |  |  | |
| **6.2** | | Operation of the Sprayer | TfNSW R106/  R107 C.L. 6.2 | Protect all fixtures using paper (or other appropriate barrier material)  Check the quantity of binder sprayed against the area covered and make necessary adjustments.  50 mm overlap spray between adjacent longitudinal for special type end nozzles or intermediate nozzles set with a jig.  normal manner for intermediate nozzles and the overlap must be at least 300 mm. | Yes  No  N/A |  |  |  |  | Dip after each run  Within ±5% of target design application rate for conventional and PMB bitumen’s  And  ±10% for PMB containing scrap rubber | |
| **6.3** | | Bitumen Type and Temperature Requirements | TfNSW R106/  R107 C.L. 6.3 & 6.6 |  | Yes  No  N/A |  |  |  |  |  | |
| **7.0 Application of Binder** | | | | | | | | | | | |
| **7.1** | | Spraying of Binder | TfNSW R106/  R107 C.L. 7.1 & 7.2 | Application of binder over primer as per design application rate.  Limit area to be sprayed to ensure coverage of aggregate at the target application rated and initially rolled within;  Conventional Bitumen: 15mins  PMB: 5mins | ☐ Yes ☐ No ☐ N/A |  |  |  |  | Keep all traffic off primed surface | |
| **8.0 Application and Incorporation of Aggregate** | | | | | | | | | | | |
| **8.1** | | Application and Incorporation of Aggregate | TfNSW R106/  R107 C.L. 8 | Only precoated aggregate should be used.  The aggregate must be of the specified size and applied at the target rate. The actual spread rate must be determined using TfNSW T274 or an approved method and reported using TfNSW Form 500E.  The aggregate must be spread uniformly using suitable equipment and any bare or insufficiently covered areas must be re-run or covered by hand to achieve uniform coverage at the target rate.  Initial rolling must be carried out using two or more dual axle smooth pneumatic tyred multi-wheel rollers with a minimum load of one tonne per tyre and minimum tyre pressure of 550 kPa until aggregate is firmly embedded in the binder.  Rolling must continue with at least eight passes within one hour of spraying at every point on the surface. Sufficient rollers must be on site to complete the specified minimum amount of rolling as a continuous operation with successive spray runs. | ☐ Yes ☐ No ☐ N/A |  |  |  |  | Aggregate application must begin within five minutes of spraying the binder and be completed and initially rolled within that time.  Aggregate containing surface moisture or free surface water should not be used.  If the aggregate is not evenly distributed, a light drag broom may be used after initial rolling. If the broom dislodges aggregate particles, drag brooming should be deferred or eliminated. | |
| **9.0 Sweeping and Loose Aggregate Removal (10mm and 14mm Seal / Reseals only)** | | | | | | | | | | | |
| **7.1** | | Final sweeping and loose aggregate measurement prior to opening to traffic. | TfNSW R106/  R107 C.L. 7.1 & 7.2 | All loose material removed.  Measure loose aggregate particles – RMS Test method T277.  Maximum allowable loose particles:  Urban Areas: 20 particles / m²  Other medium to high traffic (250 v/l/d): 30 particles / m²  Low traffic (≤ 250 v/l/d): 40 particles / m² | ☐ Yes ☐ No ☐ N/A | W |  | W |  | Temporary 60 km/h speed zoning must be in place until the maximum allowable loose aggregate requirement is met. | |
|  | **Comments**: | | | | | | | | | |  |
|  |  | | | | | | | | | |  |
|  |  | | | | | | | | | |  |
|  |  | | | | | | | | | |  |
|  |  | | | | | | | | | |  |
|  |  | | | | | | | | | |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Site acceptance:** | | | | |
| Symal Infrastructure representative name |  |  | Shoalhaven City Council representative name |  |
| Symal Infrastructure representative signature |  |  | Shoalhaven City Council representative signature |  |

**Inspection key: W –** Witness, **H –** Hold Point, **S –** Surveillance